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**State of California  
The Resources Agency  
Department of Water Resources**

**FINAL**

**NEPA SCOPING DOCUMENT 1  
and  
CEQA NOTICE OF PREPARATION**

**Oroville Facilities Relicensing  
FERC Project No. 2100**



SEPTEMBER 20, 2002

**GRAY DAVIS**  
Governor  
State of California

**MARY D. NICHOLS**  
Secretary for Resources  
The Resources Agency

**THOMAS M. HANNIGAN**  
Director  
Department of Water Resources

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<sup>1</sup> Appendices B and C from the Draft SD1 have been combined into Appendix B of this Final SD1

## ACRONYMS AND ABBREVIATIONS

af	acre-feet	maf	million acre-feet
ALP	Alternative Licensing Procedures	MTBE	methyl-tertiary butyl ether
BCDA	Butte County Department of Agriculture	msl	mean sea level
BLM	U.S. Bureau of Land Management	MW	megawatt
CEQA	California Environmental Quality Act	NEPA	National Environmental Policy Act
CEQ	Council on Environmental Quality	NF	North Fork
CFR	Code of Federal Regulations	NGO	Nongovernmental Organization
cfs	cubic feet per second	NMFS	National Marine Fisheries Service
DEA	Draft Environmental Assessment	NOP	Notice of Preparation
DEIR	Draft Environmental Impact Report	PDEA	Preliminary Draft Environmental Assessment
DFG	California Department of Fish and Game	PG&E	Pacific Gas and Electric Company
DPR	California Department of Parks and Recreation	PM&E	Protection, Mitigation and Enhancement
DWR	California Department of Water Resources	PNF	Plumas National Forest
EA	Environmental Assessment	RV	recreational vehicle
ECPA	Electric Consumers Protection Act	RWQCB	Regional Water Quality Control Board
EIR	Environmental Impact Report	SD	Scoping Document
EIS	Environmental Impact Statement	SD1	Scoping Document 1
FEA	Final Environmental Assessment	SD2	Scoping Document 2
FERC	Federal Energy Regulatory Commission	SHPO	State Historic Preservation Office
FPA	Federal Power Act	SWP	State Water Project
IIP	Initial Information Package	SWRCB	State Water Resources Control Board
LFC	low flow channel	taf	thousand acre-feet
LOSRA	Lake Oroville State Recreation Area	UC	University of California
		USACE	U.S. Army Corps of Engineers
		USFS	U.S. Forest Service
		USFWS	U.S. Fish and Wildlife Service

## EXECUTIVE SUMMARY

The California Department of Water Resources (DWR), the licensee, constructed and operates the Oroville Facilities<sup>2</sup>. The Oroville Facilities were developed as part of the California State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. Their main purpose is to store water and distribute it to 29 urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, and Southern California. Of the contracted water supply, approximately two-thirds goes to municipal and industrial users and one-third goes to agricultural users. In addition, the Oroville Facilities store and deliver approximately one-million acre feet (1,000,000 af) of water to local senior water rights holders annually.

The SWP makes deliveries of supplemental water supply to two-thirds of California's population. The Oroville Facilities are also operated to provide power generation, improve water quality in the Delta, manage Feather River floodwaters, provide recreation, and enhance fish and wildlife.

The Oroville Facilities operate under a license issued by the Federal Energy Regulatory Commission (FERC) on February 11, 1957, for a term of 50 years. The license for the facilities will expire on January 31, 2007. Under requirements of the Federal Power Act (FPA) and the FERC regulations, the licensee is required to file an application for new license (relicense) on or before January 31, 2005.

After consulting with resource agencies, Indian Tribes, local organizations, nongovernmental organizations (NGO), and the public, the licensee (DWR) requested and received approval from the FERC to use an Alternative Licensing Procedure (ALP) for the relicensing of the Oroville Facilities as allowed under FERC's Final Rule issued on October 29, 1997 (Docket No. RM 95-116-000; Order No. 596). The ALP is intended to expedite the licensing process by combining the prefiling consultation and federal and State environmental review processes into a single process, and to improve and facilitate communications among participants in the licensing process. This ALP will combine requirements of the FPA, the FERC regulations, the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), and comply with State and federal resource agencies approval and permitting processes.

In order to identify issues, plan studies, and consider potential protection, mitigation, and enhancement (PM&E) measures, the licensee, State and federal agencies, Indian Tribes, local government officials, and interested members of the public are actively participating in the relicensing process as the Collaborative Team. The Collaborative Team has been working together for several months. The Collaborative Team adopted a Process Protocol (these are available at [www.oroillereicensing.water.ca.gov](http://www.oroillereicensing.water.ca.gov)) that sets forth the structure and procedures for the ALP.

This Final Scoping Document 1 (SD1) and Notice of Preparation (NOP) is a work product of the Collaborative Team. The draft SD1 issued on September 27, 2001, was designed to further the public's understanding of the Oroville Facilities and to solicit comments on the scope of the Preliminary Draft Environmental Assessment (PDEA) and any supplemental information that will be

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<sup>2</sup> For purposes of this document, the term "Oroville Facilities" (or Project No. 2100) refers to elements of the State Water Project, Oroville Division, as identified in the Federal Energy Regulatory Commission License, Project No. 2100. These elements are listed in Section 2.1 of this document.



filed with FERC as part of the licensee's Application for New License and submitted to the State Clearinghouse as required by CEQA. In addition to the Collaborative Team meetings, which are open to the public, public scoping meetings were held on October 29 and 30, 2001. Any person who was unable to attend a public scoping meeting could submit written comments and information to the licensee by November 26, 2001. This Final SD1 is based on comments and recommendations received by the licensee at public scoping meetings and in writing.

The Collaborative Team, consisting of the Plenary Group, Technical Work Groups, and Task Forces, has been meeting on a regular monthly basis to provide input to the relicensing process. Anyone interested in finding out more about the Collaborative Team, and potentially participating in Collaborative Team meetings, should contact Theresa Cuyar at DWR at 916-653-1096. A schedule of the relicensing process is included in Section 1.6.

## **1.0 INTRODUCTION**

The California Department of Water Resources (DWR) constructed and operates the Oroville Facilities<sup>3</sup> and manages these facilities for the public interest as a multipurpose water supply, flood management, power generation, recreation, fish and wildlife enhancement, and salinity control project. The facilities operate under a license from the Federal Energy Regulatory Commission (FERC or Commission). The FERC may issue licenses for up to 50 years for the construction, operation, and maintenance of nonfederal hydroelectric developments. The current license for the facilities expires on January 31, 2007. Pursuant to the Federal Power Act (FPA), the licensee (DWR) is required to file an application for a new license (relicense) on or before January 31, 2005. In addition, the licensee will be the Lead Agency for the preparation of an Environmental Impact Report (EIR) for California public agency approvals relating to environmental impacts associated with the proposed relicensing of the Oroville Facilities' power generation components.

The Oroville Facilities are located on the Feather River in the foothills of the Sierra Nevada in Butte County, California (Figure 1). They are located near the City of Oroville and are about 70 miles north of Sacramento. The primary purpose of the facilities is water supply, but they are also managed to meet other purposes, including flood management, power generation, recreation, fish and wildlife enhancement, and salinity control. DWR's goal in the relicensing process is to obtain a new license that provides for these purposes while also addressing stakeholder needs identified through the process.

The Draft Scoping Document (SD1) and Notice of Preparation (NOP) was prepared in compliance with scoping requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The SD1 documents are intended to: 1) describe how interested parties can participate in the relicensing process; 2) identify scoping and relicensing activities; 3) present information about the Oroville Facilities; and 4) preliminarily identify resource issues. The Draft SD1 was issued on September 27, 2001. Since that time several public meetings have been held and numerous written comments received regarding information provided in the Draft SD1 and relicensing of the Oroville Facilities. This Final SD1 and NOP has been prepared to incorporate comments received from the stakeholders and allow the licensee to address those comments or explain how they are being addressed within the relicensing process.

### **1.1 Alternative Licensing Procedures for the Oroville Facilities**

The licensee hosted public meetings in Oroville on June 29, 2000, and November 15, 2000, to present information about the ALP to interested parties. Follow-up activities to this meeting included mailings, presentations, and both formal and informal meetings with federal and State resource agencies, local Indian Tribes, local governments, and NGOs during the summer and fall of 2000. Participants in these activities generally indicated support for the collaborative approach, and on November 16, 2000, the licensee submitted a request to FERC to use the ALP in relicensing the Oroville Facilities. On January 11, 2001, the Commission approved the licensee's request to use an ALP for the Oroville Facilities relicensing, as allowed under FERC's Final Rule issued on October 29, 1997 (Docket No. RM 95-116-000; Order No. 596) (18 CFR Section 4.34).

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<sup>3</sup> For purposes of this document, the term "Oroville Facilities" (or Project No. 2100), refers to elements of the State Water Project, Oroville Division, identified in the Federal Energy Regulatory Commission Project No. 2100. These elements are listed in Section 2.1 of this document.

Over the past year, Indian Tribes, federal, State, and local resource agencies, other interested parties, and the general public (collectively referred to as participants) have held meetings to establish the structure and ground rules of the process, identify relicensing issues, and discuss the goals and objectives of the process. The participants established a three-tiered process to accomplish the work required by the relicensing. The three tiers include a Plenary Group, Work Groups, and Task Forces.

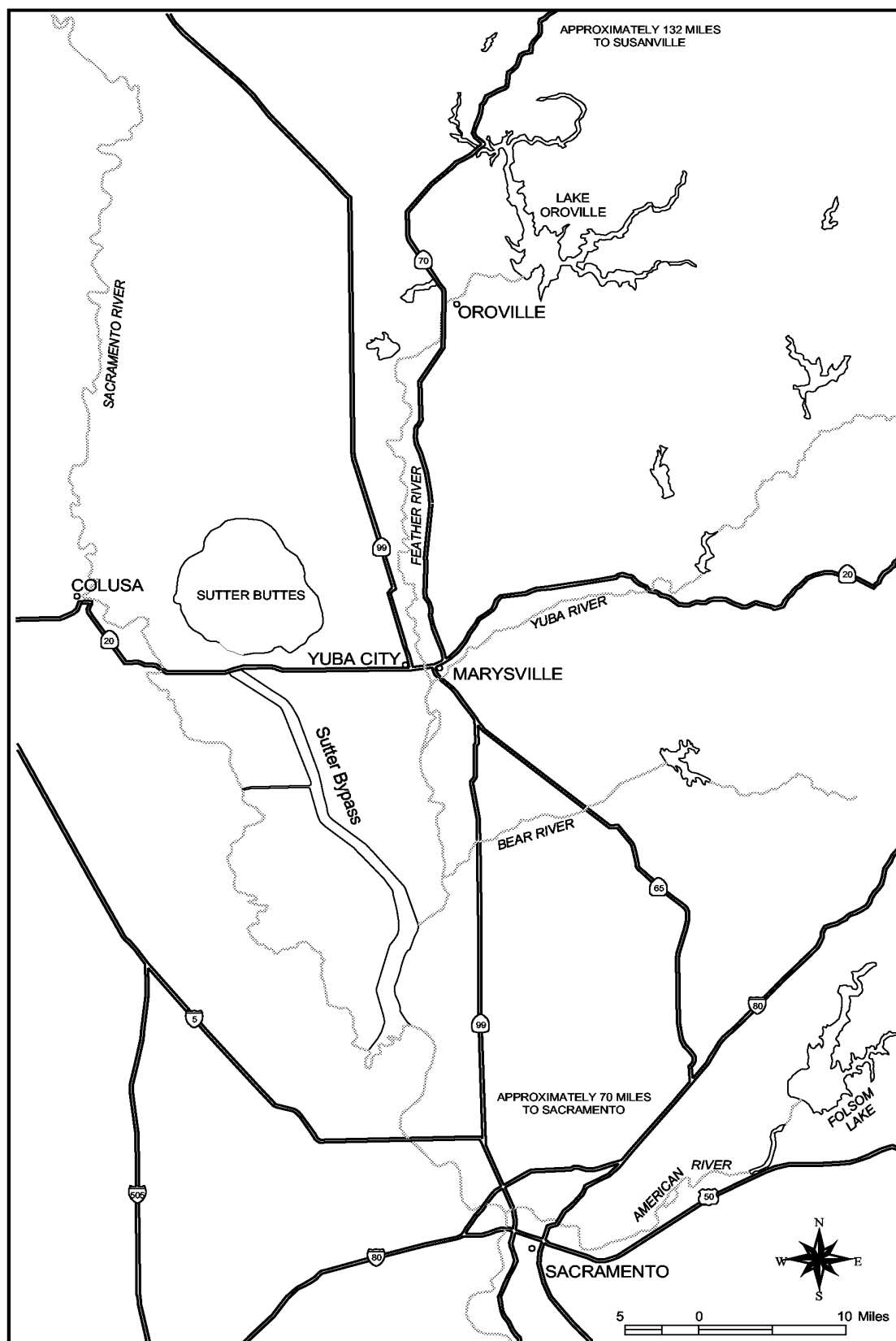
The Plenary Group is made up of representatives of varied interests and is intended to provide a global perspective on relicensing. Five Work Groups (Recreation and Socioeconomics; Environmental; Engineering and Operations; Land Use, Land Management and Aesthetics; and Cultural Resources) have been established. Task Forces were established as needed to undertake specific activities identified by Work Groups.

Several options are available for stakeholders who wish to stay informed and involved in the relicensing process, but who may not be able to actively participate. These include review of DWR's website ([www.oroillereicensing.water.ca.gov](http://www.oroillereicensing.water.ca.gov)), providing comments via a toll-free number (866-820-8198) or E-mail address ([orovillep2100@water.ca.gov](mailto:orovillep2100@water.ca.gov)), or reviewing the licensee's quarterly newsletter.

The ALP is intended to expedite the licensing process by combining the FERC pre-filing consultation and environmental review processes required under the NEPA, CEQA, and related State and federal regulatory requirements into a coordinated process and by improving and facilitating communication among the participants in the licensing process.

As noted above, the ALP is designed to expedite the relicensing process by improving and facilitating communication among the participants involved in the relicensing consultation process. The approach chosen by the licensee includes the following concepts:

- implementation of NEPA scoping early in the relicensing process to facilitate early involvement by interested parties and to focus study efforts on issues determined to be directly related to the Oroville Facilities;
- implementation of Process Protocols designed to provide a framework for communication, cooperation, consultation, and eventual settlement among the licensee, the FERC, government and public agencies, federally recognized Indian Tribes, and other interested parties and organizations (collectively referred to as "Participants" or "Collaborative Team") in connection with relicensing the Oroville Facilities;
- preparation or conversion of relicensing and NEPA/CEQA documents into electronic formats with the goal of reducing paperwork and creating documents that will be easily usable by involved participants and the FERC;
- completion of a series of meetings designed to provide the Collaborative Team and other interested parties with the opportunity to help shape the content and direction of the proposed NEPA process; and
- cooperatively scoping of environmental issues and study approaches.



**Figure 1. Location of the Oroville Facilities**

Environmental documents and scoping for the relicensing of the Oroville Facilities must satisfy the requirements of the FPA and the FERC regulations (18 CFR Subchapter B, Parts 4 and 16), the NEPA of 1969<sup>4</sup> and the CEQA. The requirements of these federal and State laws are substantially similar, and the licensee plans to conduct the processes concurrently. The format and outline of the preliminary draft EA presented in Section 6.0 has been designed to be easily convertible to that of an EIS if it is determined by FERC staff later in the evaluation and study process that an EIS is required. Requirements for a CEQA Environmental Impact Report (EIR) will also be addressed in the relicensing.

A Preliminary Draft Environmental Assessment (PDEA) will be completed by the licensee in coordination with the Collaborative Team and FERC staff, and filed with FERC in lieu of the Exhibit E Environmental Report as part of the license application. The PDEA will also address requirements of the Environmental Impact Report (EIR) required by CEQA. The PDEA and Draft License Application will also be circulated for review and comment to interested parties. The participants in the ALP intend to reach a written settlement agreement covering resource management measures for the new license term.

Once filed, FERC staff will review the PDEA and the license application for adequacy, consider all comments submitted on these filings, including any accompanying settlement agreement, and prepare and issue a Draft Environmental Assessment (DEA) for review and comment. The DEA will present FERC staff's conclusions and recommendations for the Commission to consider in reaching its final licensing decision for the Oroville Facilities. FERC will then issue the Final Environmental Assessment (FEA), its licensing decision, and the License Order for the project after considering and incorporating comments submitted on the DEA.

Questions concerning the scoping process for the Oroville Facilities should be directed to:

Mr. Len Marino  
Department of Water Resources  
State Water Project Analysis Office  
1416 Ninth Street  
P.O. Box 942836  
Sacramento, CA 94236-0001  
916-653-6271  
[orovillep2100@water.ca.gov](mailto:orovillep2100@water.ca.gov)

or Mr. James Fargo  
Federal Energy Regulatory  
Commission  
Office of Hydropower Licensing  
888 First Street, N.E.  
Washington, DC 20426  
202-219-2848  
[james.fargo@ferc.fed.us](mailto:james.fargo@ferc.fed.us)

## 1.2 Purpose of Scoping Document 1

Scoping Document 1 addresses scoping requirements outlined in the FERC regulations for relicensing and implementing NEPA, and the State agency environmental review requirements of CEQA. FERC's NEPA regulations are found in 18 CFR Subchapter W-Revised General Rules, Part 380. Section 15082 of the CEQA Guidelines requires the circulation of an NOP to initiate the CEQA scoping process. For this project, SD1 will serve as the CEQA NOP.

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<sup>4</sup> (42 U.S.C. section 4321 *et seq.*) (National Environmental Policy Act of 1969, as amended) (Pub. L. 91-190. 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, sec. 4(b), September 13, 1982)

The purpose of the scoping process is to:

- identify important environmental and developmental issues related to the proposed project relicensing;
- identify reasonable alternatives that should be evaluated in the Environmental Assessment (EA);
- determine the scope and depth of analysis for project purposes and environmental issues identified for evaluation in the Environmental Assessment; and
- identify issues that do not require detailed analysis.

The Draft SD1 and NOP issued on September 27, 2001, was prepared in compliance with scoping requirements of NEPA and CEQA. The document was intended to further all interested parties' understanding of Project No. 2100 and to encourage the parties to actively participate and contribute to the issue scoping and the resulting resource study approaches designed for analysis of Project No. 2100 relicensing. In keeping with this purpose, the Draft SD1 included a detailed description of the scoping process (Section 1.0); a descriptive overview of the facilities and operations (Section 2.0); a description of alternatives (Section 3.0); and a preliminary listing of consolidated resource issues from informal scoping (Section 4.0). The document also included a discussion of cumulative impacts and comprehensive plans (Section 5.0); a proposed outline for the PDEA (Section 6.0); and a distribution list for the document (Section 7.0).

This Final SD1 addresses the written comments received as correspondence from interested parties following their review of the Draft SD1. In addition, comments received during two public meetings are addressed. Tables that provide a summary of specific comments along with a response from the licensee are included (Appendix E). Organization of this Final SD1 remains much the same as the draft version with the following additions and/or changes:

- revised text - provides overview of activities that followed issuance of the Draft SD1, which includes edited text to reflect discussion of the Draft SD1, in past tense. In addition, the revised text reflects responses to some comments received from interested parties.
- Appendix B - the draft SD1 provided a table of preliminary resource issues, concerns, and comments that were identified by participants. That information has been incorporated into tracking tables that show the status of each issue. These tracking tables are located in Appendix B.
- Appendix C - the previous appendix contained "Additional Issues, Concerns, and Comments Under Review." This information has been incorporated into the Issue Tracking tables located in Appendix B. As a result of moving this information to Appendix B, Appendix C now contains the "Summary of Studies Related to Oroville Facilities," which was formerly in Appendix D.
- Appendix D - formerly contained a "Summary of Studies Currently Underway Related to Relicensing." The appendix has been re-titled and now contains a list of approved studies.
- Appendix E - a new appendix that includes a summary of comments received by interested parties, ALP Progress, extracted comments (from letters and public transcripts) and responses in table format, and copies of the comment letters. The public meeting transcripts are not included.

The ALP for the Oroville Facilities offers interested parties a forum for remaining actively involved during the entire consultation and study process. Moreover, this approach will also present three formal opportunities for stakeholders to provide comments to DWR and FERC, as follows:

- scope of the Environmental Assessment - written comments on SD1 and during formal public scoping meeting(s) that were held October 29 and 30, 2001;
- content of the PDEA - during the comment period prior to submittal to the FERC for review; and
- content of the DEA - during the public comment period so that comments can be received by FERC to consider in the FEA issued by FERC.

### **1.3 Scoping Meetings**

DWR held two scoping meetings and one facilities site visit in October 2001. The purpose of these meetings was to provide interested parties an opportunity to become informed about the relicensing project, the ALP, and to comment on the Draft SD1.

The facilities tour was conducted on Monday, October 29, from 8:00 a.m. to 4:00 p.m.; approximately 25 people attended. The tour was led by John Ford and Dave Ferguson with Patti Kroen acting as facilitator. It began at the Lake Oroville Visitors Center and included eight stops at the following locations:

- Lake Oroville Visitors Center;
- Bidwell Suspension Bridge Turnaround;
- Bidwell Marina;
- Dam Overlook;
- Feather River Fish Hatchery;
- North Thermalito Forebay Recreation Area;
- Monument Hill; and
- River Outlet at the Oroville State Wildlife Area.

The first public scoping meeting was held on Monday, October 29, from 6:00 p.m. to 8:30 p.m. at the State Theater in Oroville. The theater foyer was set up with five tables, one for each resource group (Environmental; Cultural; Recreation and Socioeconomics; Land Use, Land Management and Aesthetics; and Engineering and Operations) and was supervised by a resource area manager or their designee who was available for discussions with interested parties. The tables were set up with a sign-in sheet for a speaking opportunity, copies of the Draft SD1, an Initial Information Package, and issue statements related to the applicable resource area. Participants were also provided an opportunity to turn in written comments; copies of those are located in Appendix E. Rick Ramirez started the meeting and briefly discussed relicensing the Oroville Facilities along with scoping and meeting objectives. This introduction was followed by Tim Welch, who provided a brief overview of FERC. He then discussed the ALP and how it would be applied to relicensing the Oroville Facilities. He also discussed type of information FERC was looking for during the scoping process. Patti Kroen facilitated the meeting during the public comment session. There were eight public speakers, representing a diversity of groups with an interest in the project and relicensing process.

All statements verbally presented at the meeting, including those by Rick Ramirez and Tim Welch, were recorded by a court recorder and became part of the formal public record for the Oroville Facilities relicensing.

The second public meeting was held on Tuesday, October 30, from 1:00 p.m. to 3:22 p.m. at the Secretary of State Building auditorium in Sacramento. The entrance to the auditorium was set up with five tables similar to the meeting at the State Theater the evening before. Participants were provided an opportunity to turn in written comments; copies of those are located in Appendix E. Rick Ramirez started the meeting and briefly discussed the relicensing project and project facilities along with scoping and meeting objectives. Tim Welch again presented information representing the FERC and Patti Kroen facilitated the meeting during the public comment session. There were 13 speakers and all statements verbally presented at the meeting were recorded by a court recorder and became part of the formal public record for the Oroville Facilities relicensing.

Following the public meetings, DWR assembled all comments received during the meetings and from written statements. These comments were reviewed and incorporated into comment/response tables. The written statements and comment/response tables are located in Appendix E. The public meeting transcripts are available upon request or can be found at the DWR website (<http://orovillere relicensing.water.ca.gov>).

#### **1.4 Request for Information**

Federal, State, and local governments and resource agencies, Indian Tribes, NGOs, and individuals were requested to forward, or present at the scoping sessions, information they believed would assist the licensee and the FERC in conducting an accurate and thorough analysis of direct and indirect effects of the proposed project relicensing. Types of information requested included, but were not limited to:

- information, data, or professional opinions that could contribute to identifying and defining the scope of important environmental and developmental issues;
- identification of, and information from, any other similar analysis or study (completed, in progress, or planned) that was relevant to the proposed relicensing of the Oroville Facilities;
- information and quantitative data that could aid in the characterization of the existing physical, chemical, biological, cultural, recreation, and socioeconomic environments;
- information on resources that could be cumulatively affected; and
- information on future projects proposed by others in the vicinity of the project.

#### **1.5 Integration of SD1 and Study Plan Development**

The Oroville Relicensing ALP has allowed stakeholders from federal, State, and local governments and resource agencies, Indian Tribes, NGOs, and individuals to cooperatively develop 71 study plans. Study plans have been developed by resource-specific Task Forces and Work Groups, and reviewed by the Plenary Group participants for consensus. They have been developed to 1) address issues identified during the formal scoping process and series of public meetings; and 2) fulfill regulatory requirements associated with relicensing. This Final SD1 reports the progress of the ALP in developing study plans to address stakeholder issues, concerns, and comments.



Issues associated with the Oroville Facilities were collected at a series of public meetings and through the ALP process during numerous Work Group and Plenary Group meetings. These issues were included in Appendix B of Draft SD1. ALP Work Group participants used these issues to develop resource-specific issue statements (See Section 4.0). Each issue statement was further developed into an issue sheet, a tool designed to assist stakeholders in refining the issue scope, resource goals, and objectives related to that issue, and ultimately provide the basis for development of a study plan. The issue sheets are intended to reflect the range of stakeholder issues and concerns and aid in the filtering of issues. Issue sheets are working tools for participants and will remain in draft form. This process is illustrated in Figure 2. During the production of Draft SD1, additional issues, concerns, and comments were received. These were included in Appendix C of Draft SD1. After distribution of Draft SD1, Work Groups used Appendix C to further the development of study plans.

Study plans were developed at resource-specific Task Force and Work Group meetings, based on issue sheets, stakeholder participation, and comments on Draft SD1. Appendix B of this Final SD1 includes all of the issues, concerns, and comments identified in Appendices B and C of Draft SD1. Appendix B lists each issue, concern, or comment and tracks the issue through the ALP by identifying relevant studies or where the issue is expected to be addressed. See Section 4 for additional discussion on how the scoping process is integrated with the study plan development.

The Plenary Group meets regularly to discuss issues and review the progress of all Work Groups. It has reviewed the draft study plans, focused Work Groups on important subjects, and reached consensus on final study plans.

## **1.6 Environmental Assessment Preparation and Relicensing Schedule**

To assist in the relicensing process, the licensee has provided a detailed schedule for the public scoping and preparation of the environmental assessment. This is followed by an overview schedule for the relicensing of the Oroville Facilities (Figure 3). Major milestones of the preliminary schedule for preparing the Oroville Facilities Preliminary Draft Environmental Assessment (PDEA) are as follows:

Issue Draft SD1	September 27, 2001
Site Visit	October 29, 2001
Formal Scoping Meetings	October 29 and 30, 2001
Comments on Draft SD1 Due	November 26, 2001
Issue Final SD1	September 2002
Issue SD2	January 2003
Issue Draft PDEA and Draft License Application	April 2004
File PDEA and License Application	January 2005

## Scoping and Study Plan Integration Process

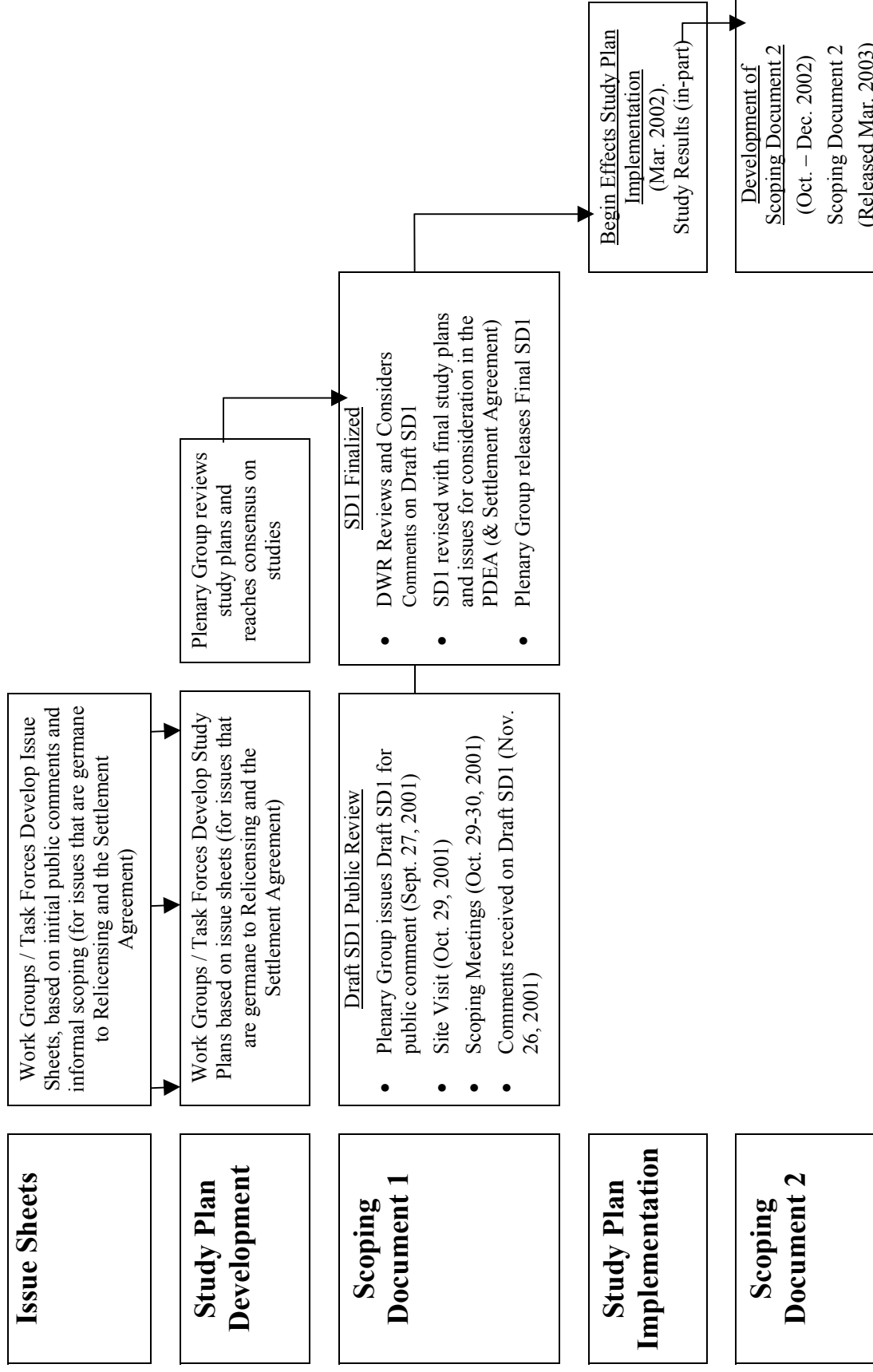
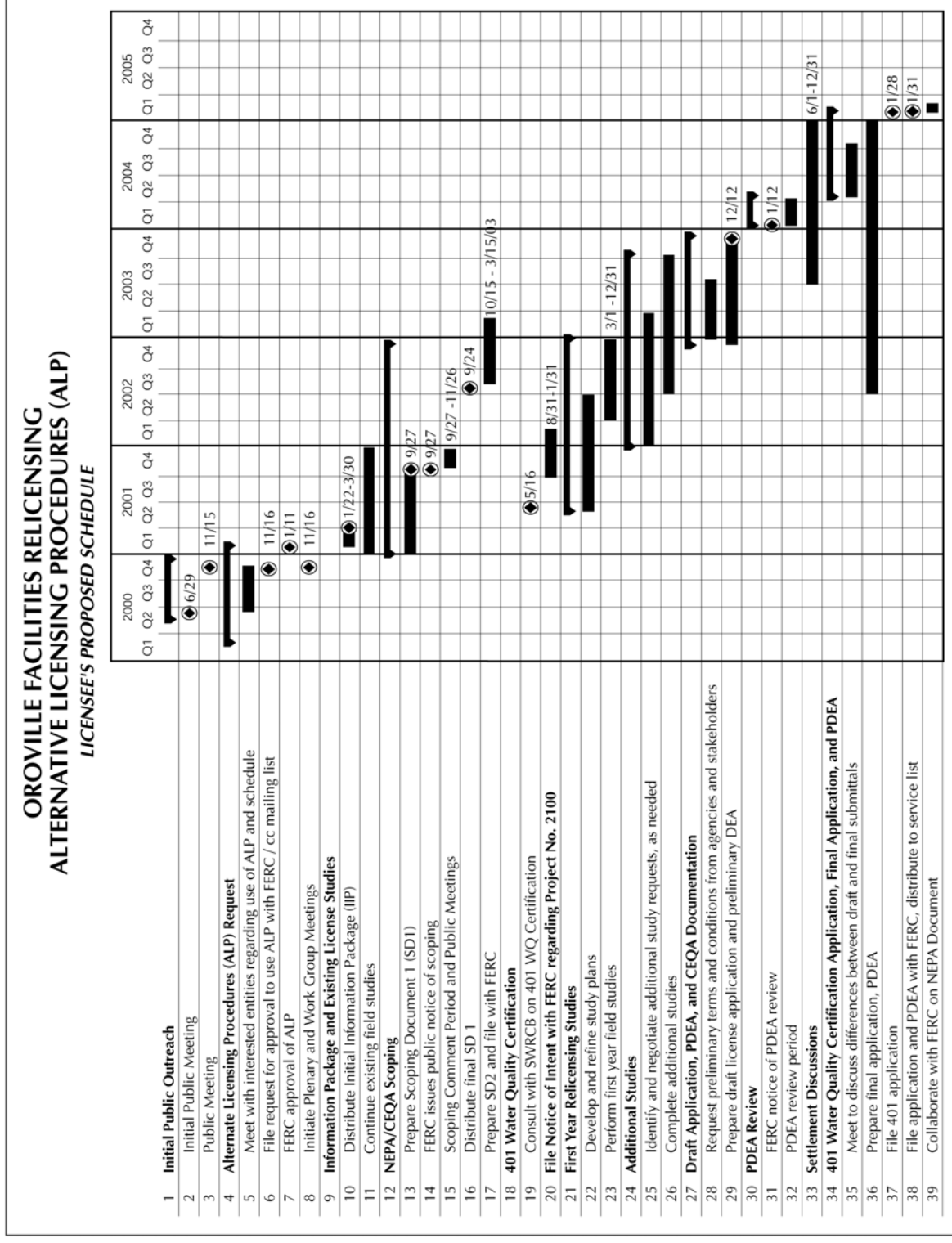


Figure 2. Scoping and Study Plan Integration Process



**Figure 3. Oroville Facilities Relicensing Schedule**

## **2.0 PROJECT NO. 2100 INFORMATION**

### **2.1 Project Description**

Project No. 2100 boundary encompasses 41,100 acres that includes Oroville Dam and Reservoir, three power plants (Edward Hyatt Pumping-Generating Plant, Thermalito Diversion Dam Power Plant, and Thermalito Pumping-Generating Plant), Thermalito Diversion Dam, the Feather River Fish Hatchery and Fish Barrier Dam, Thermalito Power Canal, Oroville Wildlife Area (OWA), Thermalito Forebay and Forebay Dam, Thermalito Afterbay and Afterbay Dam, and transmission lines, as well as a number of recreational facilities. An overview of these facilities is provided in Figure 4. The Oroville Dam, along with two small saddle dams, impounds Lake Oroville, a 3.5-million-acre-feet (maf) capacity storage reservoir with a surface area of 15,810 acres at its normal maximum operating level.

The hydroelectric facilities have a combined licensed capacity of approximately 762 megawatts (MW). The Edward Hyatt Pumping-Generating Plant is the largest of the three power plants with a capacity of 645 MW. Water from the 6-unit underground power plant (three conventional generating and three pumping-generating units) is discharged through two tunnels into the Feather River just downstream of Oroville Dam. Other generation facilities include the 3-MW Thermalito Diversion Dam Power Plant and the 114 MW Thermalito Pump-Generating Plant.

Four miles downstream of the Oroville Dam is the Thermalito Diversion Dam, which creates a tail water pool for the Edward Hyatt Pumping-Generating Plant and is used to divert water to the Thermalito Power Canal. The Thermalito Diversion Dam Power Plant is a 3-MW power plant located on the left abutment of the Diversion Dam. The power plant releases a maximum of 615 cubic feet per second (cfs) of water into the river.

The Power Canal is a 10,000-foot-long channel designed to convey both generating flows of 16,900 cfs to the Thermalito Forebay and pumping flows of 9,000 cfs to the Edward Hyatt Pumping-Generating Plant. The Thermalito Forebay is an off-stream regulating reservoir for the 114-MW Thermalito Pumping-Generating Plant.

The Thermalito Pumping-Generating Plant has a generating and pumping flow capacity of 17,400 cfs and 9,120 cfs, respectively. When in generating mode, the Thermalito Pumping-Generating Plant discharges into the Thermalito Afterbay, which is contained by a 42,000-foot-long earth-fill dam. The afterbay is used to release water into the Feather River downstream of the Oroville Facilities, serves as a warming basin for agricultural water, helps regulate the power system, provides storage for pump-back operations, and provides recreational opportunities. Several local irrigation districts also divert water from the afterbay.

The Feather River Fish Barrier Dam is downstream of the Thermalito Diversion Dam and immediately upstream of the Feather River Fish Hatchery. The flow over the dam maintains fish habitat in the low-flow channel of the Feather River between the dam and the afterbay outlet, and provides attraction flow for the hatchery. The hatchery was intended to compensate for spawning grounds lost to returning salmon and steelhead trout from the construction of Oroville Dam. The hatchery can accommodate an average of 8,000 adult fish annually.

## **2.2 Project Purpose**

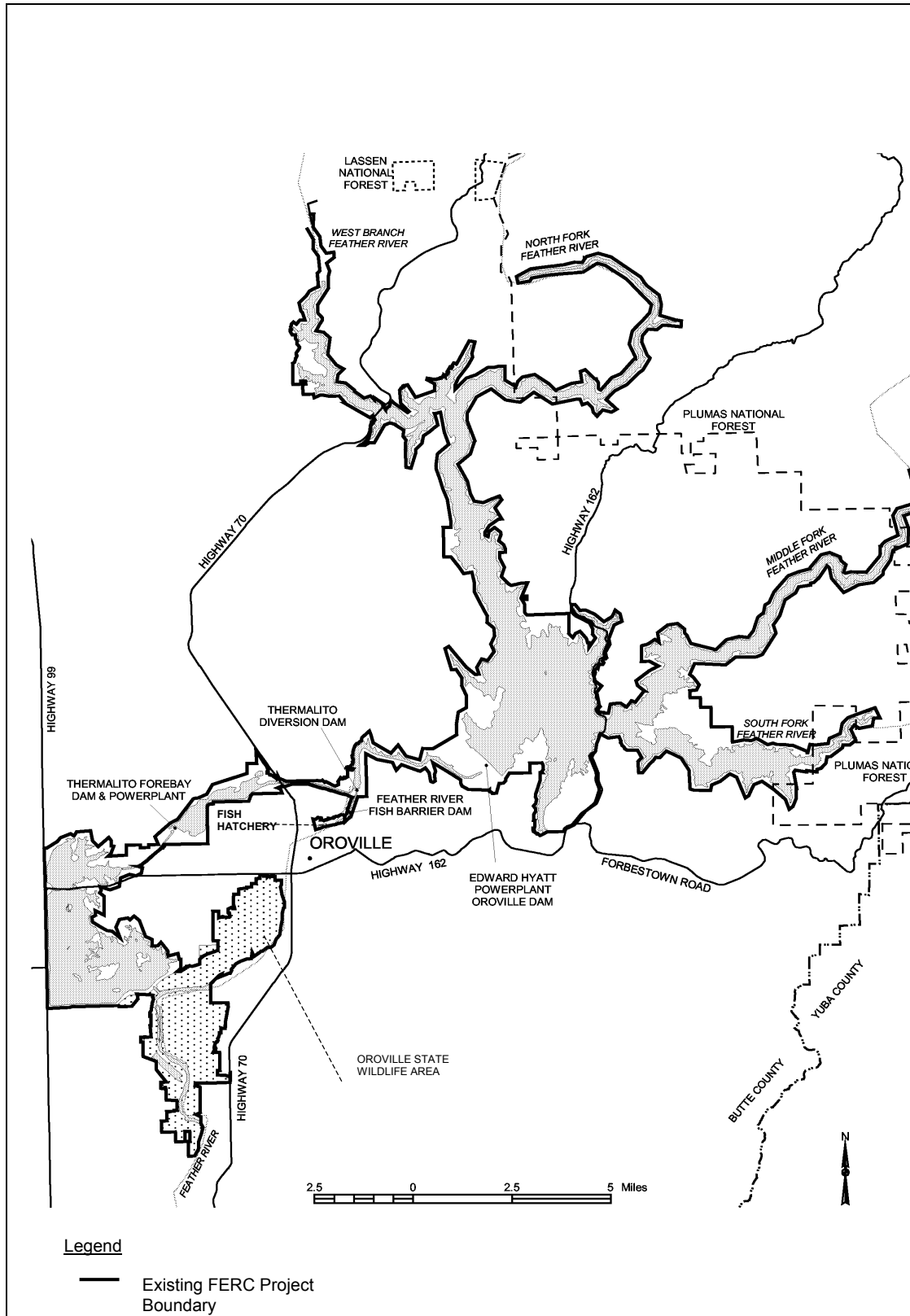
The Oroville Facilities were developed as part of the SWP, a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. The main purpose of the SWP is to store and distribute water to supplement the needs of urban and agricultural water users in Northern California, the San Francisco Bay Area, the San Joaquin Valley, and Southern California. Of the contracted water supply, two-thirds goes to urban users and one-third goes to agricultural users. The SWP makes deliveries of supplemental water to two-thirds of California's population. The SWP is also operated for flood management, power generation, to improve water quality in the Delta, manage Feather River floodwaters, provide recreation, and enhance fish and wildlife.

## **2.3 Project No. 2100 Operation**

DWR stores winter and spring runoff in Lake Oroville for release to the Feather River. Decisions regarding reservoir releases are dictated by water supply objectives, instream and downstream requirements, and public safety (i.e., flood management). A significant portion of Oroville releases are made to satisfy non-Project water use. The Department is obligated to deliver up to approximately 962 taf from Thermalito Afterbay under its water rights settlement contracts with the Joint Water Districts Board and Western Canal. The Joint Board and Western Canal have water rights to the natural flow of the Feather River, which are senior to the Department's. Power generation occurs within the operational boundaries defined by the overall release objectives described above. The Feather River, a major tributary to the Sacramento River, contributes about 25 percent of the flow that drains from the Sacramento Valley. The area of the Feather River watershed that drains to the Oroville Facilities is approximately 3,600 square miles.

Operations planning can be broken down into long-term, strategic, and tactical components. The long-term plans for reservoir releases account for the overall objectives of the SWP. On an annual basis, reservoir storage is used to satisfy a variety of needs. Generally, the reservoir will be drawn down to allow for adequate delivery of water to the SWP and provide supplies for future years. The goal of this approach is to ensure the SWP can continue to meet its water supply and environmental commitments over a prolonged period of drought. The overall operations plan for the SWP is updated regularly to reflect changes in hydrology and downstream operations. Typically, Lake Oroville is filled to its maximum annual level of up to 900 feet above mean sea level (msl) in June and then can be lowered as necessary to meet downstream requirements, reaching its minimum level in December or January. During drier years, the lake may be drawn down more and may not fill to the desired levels the following spring. During 1991, 1992, and 1993, the minimum elevations were 651 feet, 702 feet, and 723 feet, respectively. During winter conditions, Lake Oroville is managed to control downstream flooding. The U.S. Army Corps of Engineers (USACE) requires Lake Oroville to be operated to maintain up to 750 taf of storage to capture significant inflows for flood management. The maximum flood flows released from Lake Oroville were 160,000 cfs in 1997.

Strategic and tactical planning: On a weekly basis, releases are planned to accommodate the water supply requirements of local water users, the Sacramento-San Joaquin Delta water quality, Feather River instream flow, water supply to the State Water Contractors, and the minimum flood management space. Power generation is scheduled one to three days in advance based upon overall weekly planned operations. The weekly plan is updated as needed to respond to changing conditions, particularly water quality conditions in the Delta.



**Figure 4. Oroville Facilities FERC Project Boundary**

The Thermalito Diversion Dam Pool and the Thermalito Forebay and Afterbay are too small for seasonal storage, so they are used only in weekly and daily operations planning. Hourly releases through the Hyatt and Thermalito Pumping-Generating Plants are scheduled on an hourly basis to maximize the amount of energy produced when power values are highest. Because the downstream water supply is not dependent on hourly releases and pumping of SWP water can be scheduled at off-peak times, hourly operations are primarily dictated by electrical energy prices and ancillary service requirements such as spinning reserve, the supplemental energy market, and voltage regulation.

Storage in the Thermalito Forebay and Afterbay is used to maximize the value of power generation and maintain uniform flows in the Feather River downstream of the Oroville Facilities. The Thermalito Afterbay also provides storage for pump-back operations. The pump-back operations are designed to use water in excess of what is required for downstream flow requirements for pumping back into the Thermalito Forebay and into Lake Oroville. The water is pumped back in off-peak energy hours and is then re-released during peak hours, when power rates are higher. Because the power plants are operated to maximize weekday generation when power prices are highest, there is usually higher storage in the afterbay by the end of the week. During the weekend, water from the afterbay continues to be released to the Feather River, generation at the Hyatt/Thermalito plants is decreased, and pump-back operations into Lake Oroville may occur. By the end of the weekend, the elevation of the afterbay is lowered to prepare for a similar operation the following week.

Flows in the low-flow channel just below the Thermalito Diversion Dam are maintained at a minimum of 600 cfs for fishery purposes, mainly by passing the flow through the 3-MW Thermalito Diversion Dam Power Plant. Flows in the Feather River are further augmented at the Thermalito Afterbay to meet downstream flow requirements and water supply needs. Generally, the minimum downstream flow requirements are 1,700 cfs below Thermalito Afterbay from October to March, and 1,000 cfs from April to September. However, if runoff for the previous April through July period is less than 1,942,000 af (i.e., the 1911-1960 mean unimpaired runoff near Oroville), the minimum flow can be reduced to 1,200 cfs from October to February and 1000 cfs in March. A maximum flow of 2,500 cfs is maintained from October 15 through November 30 to prevent spawning in over-bank areas that might become de-watered.

In addition to flow requirements, Project No. 2100 is operated to meet water temperature objectives for the Feather River Fish Hatchery water supply and for the Feather River downstream of the Thermalito Afterbay Outlet. The hatchery temperature objectives are given below.

<b>Time of Year</b>	<b>Temperature Objective</b>
September	52°F +/- 4°F
October and November	51°F +/- 4°F
December through March	55°F
April through May 15	51°F +/- 4°F
Last half of May	55°F +/- 4°F
June 1-15	56°F +/- 4°F
June 16 through August 15	60°F +/- 4°F
August 16-31	58°F +/- 4°F

The objectives for the Feather River downstream of the Thermalito Afterbay Outlet are to provide relatively constant flows and appropriate water temperatures for fish and agriculture. After

September 15, the temperatures must be suitable for fall-run Chinook. From May through August, they must be suitable for shad, striped bass, and other warmwater fish. Water temperatures are met through a shutter-controlled intake gate system at the Oroville Dam that allows the licensee to release water from various reservoir depths.

The water temperature objectives for fish sometimes conflict with temperatures desired by agricultural diverters. Rice farmers desire water temperatures of 65°F from approximately April through mid-May and 59°F during the remainder of the growing season. The licensee is now trying to accommodate these needs by releasing water at the higher end of the temperature range required for the hatchery.

## **2.4 Existing Environmental Protection Measures**

This section identifies some of the measures that the licensee and others have implemented, either voluntarily or in accordance with current license requirements or interagency agreements, to maximize Project No. 2100 benefits and protect natural resources.

CALFED: Through the CALFED Bay-Delta Program, the DWR and other federal and State agencies are working to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta System. This Program has extensive projects intended to address issues that have been and may be identified in the Oroville Facilities Relicensing. The licensee will coordinate its relicensing activities to prevent duplication of effort and funding.

Central Valley Project Improvement Act: The State of California, including the DWR, is cooperating with the United States' implementation of the Central Valley Project Improvement Act, which is intended, in part, to (1) protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California; (2) address impacts of the Central Valley Project on fish, wildlife, and associated habitats; and (3) contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. This Act authorizes and directs extensive programs intended to address issues that have been and may be identified in the Oroville Facilities Relicensing. The licensee will coordinate its relicensing activities to prevent duplication of effort and funding.

Biological Opinion for Spring-run Chinook Salmon and Steelhead: The National Marine Fisheries Service (NMFS) issued a biological opinion on interim operations of the Central Valley Project and SWP between January 1, 2001, and March 31, 2002, on federally listed threatened Central Valley spring-run Chinook salmon and threatened Central Valley steelhead. When applicable, DWR will operate the Oroville Facilities pursuant to that opinion.

Annual operations planning: The licensee coordinates with multiple agencies in planning annual operations to balance forecasted water supply and operations of the Central Valley Project with regulatory (flood management, instream requirements, and water quality) and contractual obligations.

Flood management: During the winter, the licensee operates the Oroville Facilities to provide flood management benefits. Flood storage capacity is maintained and releases are managed according to specific requirements defined by regulations of the U.S. Army Corps of Engineers (USACE).



Instream flows and water quality: Minimum flows in the Lower Feather River are managed according to the terms of a 1983 agreement between the licensee and the California Department of Fish and Game (DFG). This agreement establishes criteria for flow and temperature, with the objective of preserving salmon spawning and rearing habitat. These criteria apply to the low-flow channel of the Feather River and the reach of the Feather River below the Thermalito Afterbay outlet to the confluence with the Sacramento River. The agreement also specifies water temperatures below the Thermalito Afterbay outlet and water temperatures provided to the Feather River Fish Hatchery.

Water temperatures are also regulated by a 1969 agreement between the licensee and Joint Water Districts. To assist farmers in achieving agricultural production objectives that rely on warm water, the licensee releases water that is as close as possible to the maximum allowable under the 1983 DWR-DFG agreement.

Feather River Hatchery: The hatchery began production in 1967 with the original purpose of mitigating for the loss of spawning habitat in the Feather River and its tributaries due to construction of Oroville Dam. DFG operates the hatchery under contract to DWR, and DWR pays all hatchery-associated costs with the exception of some that are part of enhancement at the Thermalito facilities.

Reservoir fisheries: Lake Oroville supports both warmwater and coldwater fisheries. The warmwater fishery, comprised of black bass, catfish, sunfish, and crappie, is one of the most important in the State. DWR recently completed the implementation of a six-year habitat improvement plan aimed at increasing the amount of cover available for spawning and nursery habitat for warmwater fish and may extend the project to 2004. DWR is also working with DFG to develop a new stocking program for coldwater fish. In recent years, DFG has stocked Chinook salmon and brown trout in Lake Oroville.

Vegetation: The licensee cooperates with DFG, the California Department of Parks and Recreation (DPR), the California Department of Transportation, Butte County Department of Agriculture (BCDA), and local irrigation districts to control noxious weeds.

Wildlife: Portions of the Oroville Wildlife Area are within the Project No. 2100 project boundary and are managed by DFG to provide habitat for nesting and wintering waterfowl. The Oroville Wildlife Area was developed under the original Project No. 2100 license to provide enhancement of wildlife habitat within the Project No. 2100 area. The Wildlife Area also has limited fishing and camping facilities.

Lake Oroville State Recreation Area: Existing facilities at Project No. 2100 offer a wide variety of recreational opportunities. These include boating and fishing, developed and primitive camping, picnicking, swimming, horseback riding, hiking, off-road bicycling, wildlife watching, and hunting. Visitor information sites at several locations provide displays about the facilities and the historical, cultural, and natural resources of the area. There have been significant concerns in the Oroville community about the State's compliance with the current license provisions on recreation and the overall status of recreation development.

The licensee, in cooperation with the DPR, is responsible for several major recreation facilities. These are located at Loafer Creek, Bidwell Canyon, the Spillway, Thermalito North and South Forebays, and Lime Saddle. There are also recreation facilities at the visitor center, Thermalito Afterbay, and the Oroville Wildlife Area. Two full-service marinas, five car-top boat launch ramps,

ten floating campsites, and seven floating toilets provide for the practical needs of visitors. These facilities are managed in keeping with the Project No. 2100 Recreation Plan approved by FERC in 1994.

Land use and management: The Project No. 2100 area is managed primarily through seven land and resource management plans. In general, these plans emphasize resource conservation, provision of high quality recreational opportunities, and protection of visual resources.

## **2.5 Water Rights**

The State Water Resources Control Board has issued four water rights permits to the licensee covering the operation of Oroville Dam and the SWP's diversions from the Feather River in the area below the dam and from the Sacramento-San Joaquin Delta. Two permits, P16477 and P16480, allow the use of up to 11,000 cfs of direct diversion and up to 3,880,000 acre-feet per year diversion to storage for power generation at the Oroville complex, incidental recreation, and fish and wildlife enhancement. Permits P16478 and P16479 provide for the use of the same quantities of water for consumptive use purposes. The water diverted under permits P16478 and P16479 may be stored at the Oroville Facilities, directly diverted from the Feather River or the Delta and used within the entire SWP place of use.

### **3.0 PROPOSED ACTION AND ALTERNATIVES**

Alternatives for the future operation of Project No. 2100 will be developed to address the environmental issues identified during the scoping process, pre-scoping consultation, and settlement discussions. These alternatives will be included in SD2. Based on an analysis of these alternatives, FERC will consider whether and under what conditions to issue a new licenses for this project.

#### **3.1 Alternatives Considered**

During the relicensing process, the public may offer recommendations about the future operations of Project No. 2100 and about enhancements to resources potentially affected by the project. These recommendations, in addition to those proposed by DWR, will be considered and evaluated as part of the alternatives development process. Broad categories of preliminary alternatives are summarized below in this Section and could form the basis for the specific alternatives to be analyzed as part of relicensing the Oroville Facilities. The licensee will provide a reasonable range of alternatives for public review in Scoping Document 2 (SD2), using potential criteria such as:

- does not conflict with applicable federal and State law and regulations;
- represents the least costly way to meet the stated goal and/or objective;
- demonstrated measurable effectiveness (biological, social, etc);
- would significantly benefit target resources/interests;
- poses the least number of negative effects and/or interactions among and between resource management requirements and needs;
- provides the greatest number of positive effects and/or interactions;
- benefits likely to persist over the long term;
- potential for inclusion in Settlement Agreement;
- potential opportunities for collaborative efforts and cost-sharing;
- can develop a monitoring and evaluation component;
- consistent with management objectives of the jurisdictional agencies; and
- can be implemented and measured.

##### **3.1.1 Applicant's Proposed Action**

The licensee proposes to obtain a new license to continue to operate the Oroville Facilities. The licensee anticipates that significant environmental protection, mitigation, or enhancement (PM&E) measures will be recommended by the ALP participants and that these may be crafted into a settlement agreement that forms the basis of the proposed action. At this time, no structural or operational modifications or specific resource enhancements have been proposed by the licensee; therefore, this alternative cannot be defined in detail.

##### **3.1.2 Other Alternatives to be Formulated and Considered**

The licensee proposes to develop alternatives to the proposed action based on agency and public comments during the scoping process and participation in Work Groups. These alternatives will be composed of various PM&E measures. These measures could be adopted by the licensee for inclusion in the DEIR and PDEA as the proposed project and preferred alternative. The following is a preliminary list of the engineering and operations issues that will be considered during development of PM&E components that could be considered for adoption.

- Evaluation of the potential for adding additional generation using existing infrastructure, modifying facilities to increase storage and associated generation, and changing operation to provide spinning reserve.
- Improvement of operations through use of real-time watershed hydrologic projections.
- Evaluation of environmental and economic aspects of different flow regimes. Factors to be considered include timing, magnitude and duration of flows, pump-back and maintenance scheduling, and hatchery operations.
- Impact of flood releases on Lake Oroville Dam and downstream facilities, including downstream levee stability and potential for ameliorating downstream flooding through coordinated releases with other water storage facilities. Consider past floods, improvements in channel carrying capacity, need for more storage (e.g., installing Obermeyer gates on the emergency spillway ogee crest), operational changes, early warning system for downstream releases, and updating of flood operation manual.

Additional engineering, operations, and developmental resource issues are listed in Section 4.10. Development of PM&E measures will be guided by data collected on Project No. 2100 facilities and affected resources. The licensee is currently conducting studies that focus on water quality and aquatic resources, which may have application for relicensing purposes. These studies are summarized in Appendix C.

### **3.1.3 No Action**

The No Action Alternative is required under regulations implementing NEPA and CEQA. Under this alternative, the Oroville Facilities would continue to operate under the terms and conditions of the existing license, and no new environmental PM&E measures would be implemented. Pursuant to NEPA, this alternative establishes the baseline environmental conditions against which all other “action” alternatives will be compared. Pursuant to the CEQA Guidelines, the baseline for CEQA will be the environmental conditions existing on September 27, 2001, the date of the NOP.

### **3.2 Alternatives Considered But Eliminated From Detailed Evaluation**

Both NEPA and CEQA require consideration of a full range of reasonable alternatives to the proposed action. The PDEA and the DEIR are expected to consider a number of alternatives. Some of these alternatives are expected to be considered in detail, and others may be eliminated from further evaluation for such reasons as feasibility or reasonableness. At this point, it is not proposed that project retirement or issuance of a non-power license be considered for further detailed evaluation.

**4.0 PROJECT-SPECIFIC CONSOLIDATED RESOURCE ISSUES** Major federal actions that may significantly affect the human environment require environmental documentation in accordance with the requirements of the NEPA. The “proposed action” in this instance is the relicensing by FERC of Project No. 2100. The licensee received FERC approval to use the Alternative Licensing Procedures to prepare its license application and environmental documentation. As explained in more detail in Section 1, the licensee will prepare a PDEA that addresses the relicensing requirements of FERC and NEPA and file the PDEA in place of the Exhibit E with its application for a new license. The PDEA will present an analysis of issues based on appropriate studies and consultations with the participants. DWR also intends to comply with requirements of the CEQA concurrent with preparing the application to the FERC. FERC will consider information presented in the PDEA, from public and agency comments, along with other process documents, and develop license articles that will prescribe requirements for Project No. 2100 during the term of the new license. FERC can only issue a license with terms and conditions that fall within FERC’s jurisdictional authority.

A licensee may elect to also propose measures that do not fall within FERC’s jurisdiction. Those measures may be included in agreements outside the purview of the FERC and are not subject to FERC enforcement. These measures may be referenced and included in the PDEA with an explanation of how they address tradeoffs for measures that would otherwise have been included in the application for a new license. For example, if future recreational enhancements include areas outside the FERC-licensed project boundary, the licensee may reference them in the Recreation Plan included in its license application and identify how they would be carried out through separate agreements. The licensee is required under CEQA to address the environmental effects of all proposed measures, including those not enforceable under the FERC license. The licensee intends to include the FERC terms and conditions and any other measures it may agree that do not require FERC’s approval in a Settlement Agreement.

Beginning in June 2000, the licensee provided stakeholders with an open process to identify potential issues, concerns, and goals related to relicensing of the Oroville Facilities. Final SD1, Appendix B, “Resource Issues, Concerns and Comments Tracking” provides a historic record and current activities of this effort. The participants were engaged in a collaborative process to identify issues developed from the Draft SD1 Appendix B. This process focused on development of studies that would provide supporting data and analysis for the PDEA. These studies address issues subject to FERC’s licensing authority and may also address issues outside FERC’s authority which may be included in a Settlement Agreement. The intent, which was fulfilled, of the Draft SD1, Appendix B was to identify potential issues and describe how DWR and the participants would use the ongoing collaborative process along with the scoping process to produce focused study plans.

Applicable statutes governing the scoping process identify broad criteria for determining the need to study issues. The Council on Environmental Quality (CEQ) established basic requirements for Scoping in regulations at Title 40 of the Code of Federal Regulations, Section 1501, et. seq.

*"Scoping" is defined for NEPA purposes in the CEQ regulations as:  
"an early and open process for determining the issues to be addressed  
and identifying the significant issues related to a proposed action."*

*"A major purpose of scoping is to determine the scope (Sec. 1508.25)  
and the significant issues to be analyzed in depth in the environmental*

*document and to identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3), narrowing the discussion of these issues in the environmental document to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere. Government agencies, tribes, Non-Governmental Organizations, and other interested parties participate in identifying issues, including direct, indirect, and cumulative effects related to the proposed action and reasonable alternatives. (Section 1509.25)."*

The California Environmental Quality Act (CEQA) Guidelines (Section 1508.3) also describe the value of scoping as:

*"Identifying the range of actions, alternatives, mitigation and effects to be analyzed in the EIR, eliminating issues found not to be important."*

*"Effective in bringing together and resolving concerns of the government agencies and other interested parties."*

FERC identifies two criteria for studies necessary to prepare an adequate application for a new license:

*"Whether the requested study is reasonable and necessary in relation to the resources goals and management objectives of the resource agencies," and*

*"Whether it is generally accepted practice to use the study method requested by the agency or tribe."*

The participants in the collaborative process have understood the need to clearly articulate their issues. Through the ongoing process, participants have reached consensus on Issue Statements, which capture the relevant intent of the issues, comments, and concerns contained in Appendix B.

#### **4.1 ALP Issue Resolution Process**

The Participants have used criteria such as that listed below to facilitate the design of focused study plans. Also, these criteria will be used to meet the requirements of applicable NEPA, CEQA, and FERC regulations.

- Required by FERC regulations;
- Required by other statute or regulation, i.e. Endangered Species Act, Clean Water Act, Federal Land Policy and Management Act;
- Issue can be enforced through license conditions by the FERC;
- Issue is related to the presence of the project in the area and/or project operations and management;
- Issue addresses a demonstrated project effect or need;
- Issue can be addressed in a relicensing study(ies);

- Issue can be addressed in potential PM&E measures that can be implemented and monitored for success; and
- Issue is consistent with relicensing goals and/or objectives.

The licensee may elect to study issues not within the framework of NEPA/CEQA/FERC in order to develop the Settlement Agreement. However, provisions included in the Settlement Agreement that will not be accomplished within the license itself are to be recognized as tradeoffs for proposals that might otherwise occur within the project boundary and be subject to FERC compliance. Specific settlement agreement proposals that require evaluation may be advanced during the settlement process.

Issue Statements developed through the collaborative process are presented below. These Issue Statements may be modified through the scoping process and future discussion through the Work Groups and Plenary Group. The Work Groups and Plenary Group are currently using the issue management review process illustrated in Figure 5 to review the issues, comments, and concerns listed in Appendix B. New issues identified through the formal scoping process, have been incorporated into the study plan process, as appropriate, after application of the appropriate criteria.

## **4.2 Geology, Soils, and Geomorphology (G)**

- G1. Effects of existing and future project operations on natural geomorphic processes. These include physical attributes and functions (e.g., channel morphology, channel stability, sediment transport and deposition, spawning gravel and large woody debris recruitment, habitat diversity) and subsequent effects on biological resources (e.g., aquatic macro-invertebrates, riparian vegetation) in the low-flow section and in the Feather River downstream of Thermalito Afterbay under wet and dry year criteria.

(Expanded Issues Addressed: GE3, GE4, GE5, GE6, GE7, GE9, GE10, GE12, GE19, GE23, GE24, GE25, F1, F3, F6, F10, F11, F13, FE9, FE11, FE14, FE33, FE36, FE37, FE38, FE39, FE83, FE86, TE58, T3, T5)

- G2. Project effects on channel capacity and potential need for more storage/flood protection.

(Expanded Issues Addressed: GE8, FE38, FE39, F10, E4)

- G3. The need to coordinate long-range watershed planning activities with local, State, and federal agencies and private landowners.

(Expanded Issues Addressed: GE14, T6, T10, F5, WE11, WE12, WE15)

- G4. Project effects on sediment accumulation upstream of the dam.

(Expanded Issues Addressed: GE19, GE22, W6, W9)

- G5. Effect of the project including discharge (magnitude, frequency, and timing) and ramping rates and the altered stream hydrology on substrate scour, mobilization of sediments, turbidity levels, and riparian vegetation in the low-flow reach and downstream of the afterbay.

(Expanded Issues Addressed: GE2, GE7)

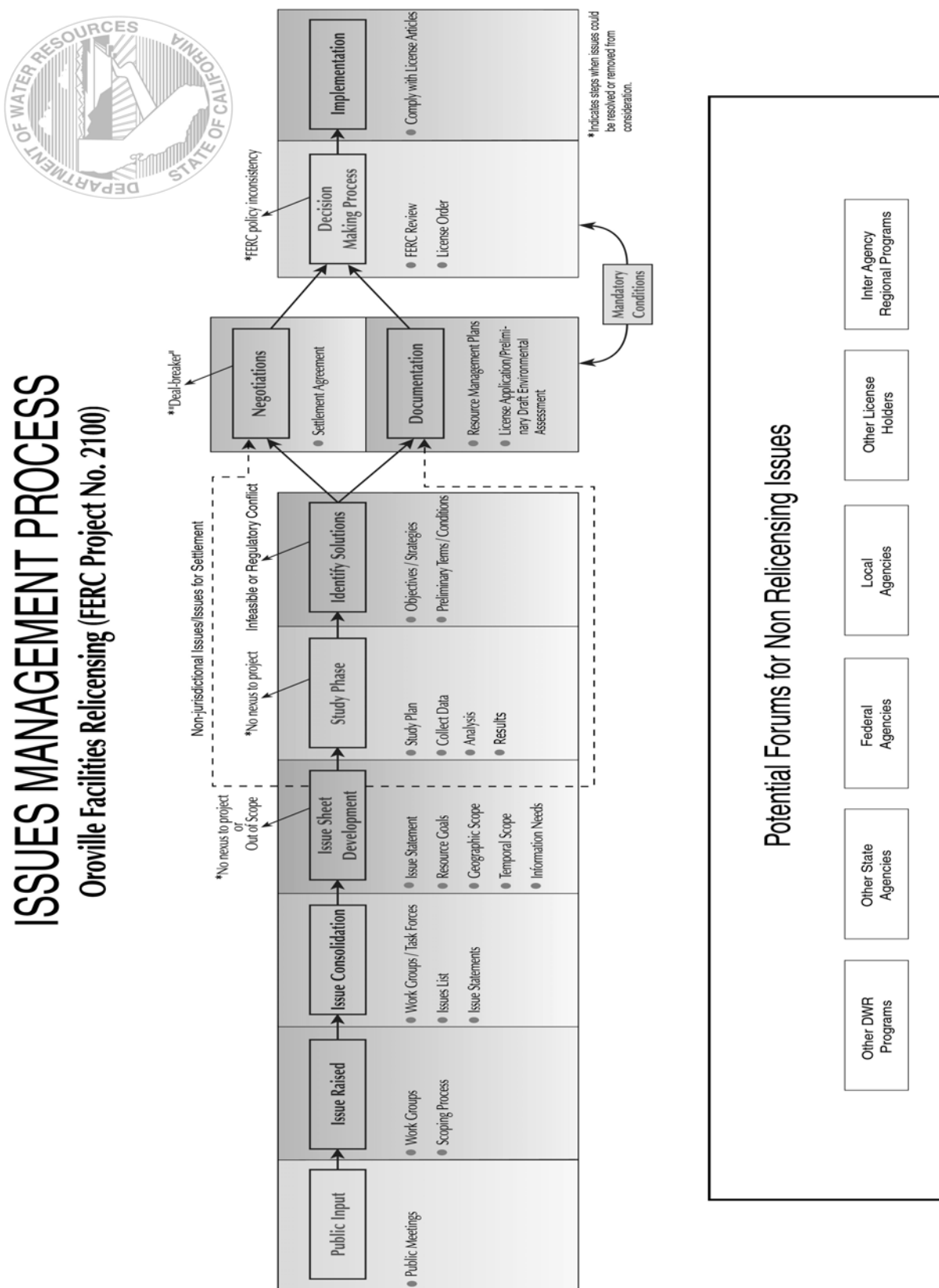


Figure 5. Issues Management Process



- G6. Cumulative effects of project facilities and operations on sediment movement and deposition (e.g., recruitment of ocean beach sands) and other geomorphic processes (e.g., maintenance of a satisfactory abiotic habitat template).

(Expanded Issues Addressed: GE21, GE24, GE25, F12, FE51, FE74, W16)

#### **4.3 Water Quantity and Quality (W)**

- W1. Effects of existing and future project operations and facilities on all designated beneficial uses of the water. The beneficial uses for the Lake Oroville and Feather River downstream as defined in the Basin Plan include municipal and domestic supply, agriculture, electrical power production, contact and noncontact recreation, warmwater and coldwater fish spawning, rearing and migration, cold and warm freshwater habitat, and wildlife habitat.

(Expanded Issues Addressed: WE1, WE10, WE19, WE24, WE25, WE30, WE31, WE32, WE36, WE37, WE40, WE46, WE47, WE48, WE50, WE54, F1, FE36, FE83, FE89, FE96, FE97)

- W2. Effects of existing and future project operations on compliance with water quality objectives identified in the Regional Water Quality Control Board (RWQCB) Basin Plan. Specific compliance issues include bacteria, chemical constituents, dissolved oxygen, pH, oil and grease, pesticides, sediment, temperature, toxicity, and turbidity.

(Expanded Issues Addressed: WE2, WE4, WE10, WE25, WE30, WE31, WE32, WE36, WE40, WE48, WE50, WE53, WE54, F1)

- W3. Effects of existing and future project operations on the physical, chemical, and biological components of water quality of the Feather River, affected tributaries, and downstream waters. The project has the potential for direct and indirect effects on aquatic ecosystem health, on recreational opportunity, and on domestic and agricultural water supply.

(Expanded Issues Addressed: WE3, WE10, WE24, WE25, WE30, WE31, WE32, WE33, WE40, WE46, WE48, WE50, WE53, F1, T1, F6, FE36, FE64, FE83)

- W4. Effects of existing and future project operations and facilities and its associated recreational facilities, activities, and uses on water quality. Proximity of project features and recreational facilities to shoreline and banks of water bodies offers potential for introduction of nutrients and bacterial contaminants to these waters.

(Expanded Issues Addressed: WE5, WE35, WE43, WE44, WE45, FE8, FE16, FE20, FE79)

- W5. Effects of existing and future water-based recreation on water quality of project waters. Concerns include MTBE, oils and greases, fuel spills, floating gas tanks, floating septic systems, floating restrooms, houseboat gray water tanks (e.g., nutrients), and pump out facilities.

(Expanded Issues Addressed: WE6, WE35, WE38, WE39, WE42, WE43, WE44, WE45)

- W6. Effect of existing and future project facilities and operations on sediment deposition and potential impoundment of metals and toxins, including the potential presence and uptake of methyl mercury through the food chain.

(Expanded Issues Addressed: WE7, WE13, WE41, G4, F6)

- W7. Effect of existing and future project-related land management and watershed management activities (including waste disposal and pesticide use) on water quality, slope stability, erosion, sedimentation, channel stability, riparian habitat, fish habitat, and other beneficial uses.  
(Expanded Issues Addressed: WE8, WE11, WE12, WE13, WE14, WE15, WE34, WE41, WE46, T1, T3, T5, T10, GE1, GE15, GE16, GE17, GE18, FE11, FE39)
- W8. Effect of existing and future project facilities and operations on natural hydrology (i.e., impaired and unimpaired hydrology).  
(Expanded Issues Addressed: WE49, WE50, T1, FE97, GE2, GE3, GE6)
- W9. Effects of existing and future project facilities and operations on thermal stratification and other thermal processes on project waters, including availability of cold water for release in various water year types under current and future operational demands.  
(Expanded Issues Addressed: WE16, WE19, WE25, WE32, G4, F1, F3, FE89)
- W10. Effects of existing and future water releases and operations on water temperatures in the Diversion Pool, Forebay, Afterbay, Oroville Wildlife Area, low-flow section of the river, and downstream areas; at the hatchery; for agriculture; and the quality and availability of habitat for salmonids and other aquatic resources.  
(Expanded Issues Addressed: WE17, WE19, WE25, WE28, WE29, WE32, WE40, WE46, WE54, F1, F10, F11, FE3, FE8, FE41, FE46, FE49, FE52, FE56, FE81, FE85, FE89, FE90, FE95, FE96, FE99)
- W11. Existing and future project compliance with temperature requirements of the SWP Feather River Flow Constraints and effectiveness of constraints for (a) protection of salmonids in the low-flow and high-flow sections of the Feather River; (b) hatchery operation; and (c) agricultural operations.  
(Expanded Issues Addressed: WE18, WE20, WE21, WE25, WE46, WE54, F11, FE33, FE41, FE46, FE49, FE56, FE89, FE90)
- W12. Effects of existing and future project facilities and operations on access to the coldwater pool during below normal (BN) water years and multiple BN water years under existing and future operational demands, and effectiveness of the Temperature Control Device in providing access.  
(Expanded Issues Addressed: WE19, WE22, WE23, F1, FE3, FE85, FE89, FE90, FE95, FE96)
- W13. Effects of existing and future hatchery operations on water quality and water temperatures in the Feather River and Afterbay.  
(Expanded Issues Addressed: WE26, WE33, F1, F9, FE88, FE89, FE90, FE95, FE96, FE99)
- W14. Effects of existing and future pump-back operations on water quality and water temperatures (in Lake Oroville, Diversion Pool, Forebay, Afterbay, and Oroville Wildlife Area), habitat suitability, and out-migration for salmonids.  
(Expanded Issues Addressed: WE25, WE27, WE54, F1, FE3, FE85, FE89, FE90, FE95, FE96)

- W15. Potential for nonproject-related toxic spills (e.g., from railroad operations) and effects of toxic spills on project waters.  
(Expanded Issue Addressed: WE51, GE16, GE24)
- W16. Cumulative effects of project operations and other past, present, and reasonably foreseeable future actions on water quality characteristics that are crucial to Oroville Facilities Relicensing resource issues.  
(Expanded Issue Addressed: WE52, G6, GE21, F12)
- W17. Effects of reservoirs and Feather River downstream of Oroville Dam on groundwater quality and quantity (e.g., hyporheic zone interaction).  
(Expanded Issue Addressed: WE55)
- W18. Effect of existing and future project facilities and operations on natural protective processes (e.g., marshes).  
(Expanded Issue Addressed: WE9)

#### **4.4 Fisheries Resources (F)**

- F1. Effects of existing and future project operations (including power generation, water storage, ramping rates, and releases, pump-back, water levels, and water level fluctuations) during all water year types on the behavior (e.g., migration timing, microhabitat selection, vulnerability to predators), reproduction, survival, and habitat of warmwater and coldwater fish and other aquatic resources (e.g., macro invertebrates), which include project waters and tributaries within the project boundaries (Lake Oroville, Diversion Pool, Fish Barrier Pool, Forebay, Afterbay, Oroville Wildlife Area), and in project-affected waters.  
  
(Expanded Issues Addressed: FE1, FE2, FE3, FE8, FE23, FE52, FE59, FE66, FE68, FE78, FE83, FE84, FE85, FE86, FE89, FE90, FE91, FE93, FE95, FE96, FE97, GE7, GE20, GE23, GE25, G1, T1, TE39, W1, W2, W3, W9, W10, W12, W13, W14, WE19, WE30, WE32, WE36)
- F2. Effects of existing and future project operations (e.g., pump-back operations, hatchery production, water temperature, etc.), and fisheries management activities (e.g., fish stocking) on the establishment, transmission, extent, and control of IHN, BKD, and other significant coldwater and warmwater fish diseases within Lake Oroville and lower river.  
  
(Expanded Issues Addressed: FE4, FE5, FE48, FE49)
- F3. Project effects on resident fish species (e.g., trout and other salmonids and warmwater fish), habitat quantity and quality (including instream flow, sediment, woody debris, water temperature, etc.), and habitat for other aquatic species.  
  
(Expanded Issues Addressed: FE9, FE12, FE13, FE59, FE64, FE78, FE81, FE84, FE95, FE96, FE97, W9, G1, GE3, GE4, GE5, GE20, GE23, GE25, WE46)
- F4. Project effects on resident fish passage, including North Fork Feather River at Big Bend Dam, tributary streams, and project affected waters.

(Expanded Issues Addressed: FE10, FE14, FE21, FE59, FE64, FE67, FE80, FE85)

- F5. Effects of existing and proposed fisheries management plan(s) and activities on a balanced coldwater and warmwater fishery (including stocking levels, hatchery management and production relative to in-river populations, habitat enhancement projects, predator and undesirable species control, and prevention of future introductions (e.g., Northern pike, striped bass, etc.), disease, tree stakes and tire removal, and harvest).

(Expanded Issues Addressed: FE15, FE18, FE19, FE22, FE23, FE44, FE47, FE52, FE58, FE63, FE65, FE70, FE73, FE79, FE91, FE92, FE95, FE96, FE100, G3, T6)

- F6. Effects of existing and future project operations on sediment deposition, erosion, and recruitment through the system (including downstream sediment supply) and associated changes in water quality on the quantity and quality of aquatic habitats within project-affected waters.

(Expanded Issues Addressed: FE24, FE89, FE95, FE96, G1, GE2, GE4, GE9, GE10, GE19, GE24, GE25, W3, W6)

- F7. Project effects on interactions, including predation and competition, among lake and tributary fish populations (e.g., land-locked Chinook salmon, trout, bass, and other land-locked species) that affect species abundance, growth, reproduction, and survival.

(Expanded Issues Addressed: FE25, FE27, FE52, FE59, FE66, FE79, FE81, FE100)

- F8. Project effects on resource energy balance in terms of changes in biomass and nutrient dispersal due to loss of anadromous fish carcasses upstream of Lake Oroville (on fish and wildlife).

(Expanded Issues Addressed: FE29, FE82)

- F9. Hatchery effects (e.g., straying, genetic impacts, harvest rates, disease, temperature requirements, interactions with native fish such as predation and competition) on salmonid populations in the Feather River watershed and other Central Valley tributaries and on ecosystem restoration within project waters and project-affected waters.

(Expanded Issues Addressed: FE31, FE87, FE88, FE93, FE95, FE96, FE99, W13, WE33)

- F10. Effect of existing and future project facilities and operations on anadromous fish habitat and populations (e.g., instream flows, water temperature, ramping rates, riparian habitat, large woody debris, predation, spawning gravels, stranding and desiccation, macro invertebrate prey base, upstream and downstream passage, rearing conditions).

(Expanded Issues Addressed: FE32, FE34, FE35, FE36, FE37, FE38, FE41, FE44, FE45, FE46, FE53, FE54, FE55, FE56, FE69, FE84, FE86, FE89, FE90, FE91, FE93, FE95, FE97, FE98, G1, G2, GE3, GE4, GE5, GE8, GE20, GE23, W10, WE 28, WE29, WE54)

- F11. Compliance of project operations with SWP Feather River Flow Constraints and adequacy of constraints to protect anadromous fish and other aquatic species in the low-flow section and in the river downstream of the Afterbay.
- (Expanded Issues Addressed: FE33, FE41, FE46, FE53, FE54, FE68, FE69, FE90, FE97, W10, W11, WE20, G1)
- F12. Evaluate existing and reasonably foreseeable future project effects in terms of cumulative impacts on regional fisheries, fish passage, and habitat quality and quantity within project-affected areas.
- (Expanded Issues Addressed: FE51, FE74, FE78, FE85, FE91, FE93, FE95, FE96, FE97, FE98, G6, GE21, GE24, W16)
- F13. Project effects on fish species listed for protection under the California and/or federal Endangered Species Acts (ESA), species of special concern, candidate species, proposed, and likely listed threatened and/or endangered fish species, and the habitat needed to support them.
- (Expanded Issues Addressed: FE57, FE60, FE68, FE71, FE72, FE86, FE91, FE95, FE97, G1, T2, T3).
- F14. Effects of existing and future project facilities and operations on the levels of recruitment of Feather River salmonids to the ocean population (e.g., sustained production of 20 percent of the commercial catch).
- (Expanded Issues Addressed: FE61, FE91)
- F15. Evaluate the quantity and quality of existing upstream habitat conditions and potential sources of mortality for anadromous salmonid spawning, rearing, and juvenile emigration. If upstream habitat conditions and constraints (e.g., disease transmission) are considered to be suitable, evaluate the feasibility of alternative methods for providing passage of anadromous salmonids (e.g., fish ladder, fish elevator, bypass channel, trap-and-truck), upstream of Oroville Dam. Assess conflicts and constraints among species and life stages and their habitat, and evaluate the overall biological benefits to the species and upstream ecosystem (e.g., nutrient transfer).
- (Expanded Issues Addressed: FE62, FE78, FE82, FE85, FE91, FE93, FE98)
- F16. Effects of existing and future project facilities and operations on the abundance of predators, their seasonal and geographic distribution, the impact of predation mortality on population dynamics of salmonids and other species, and alternatives for predator control and management (including prevention of introductions).
- (Expanded Issues Addressed: FE22, FE75, FE76, FE77, FE94)

#### **4.5 Terrestrial Resources (T)**

- T1. Effects of project features, existing and future operations (including power generation, water storage and releases, ramping rates, pump-back, water levels, and water level fluctuations), and maintenance on wildlife and wildlife habitat. Specific concerns include deer winter range, band-tailed pigeon winter habitat, designated emphasis and harvest species, wintering, brooding, and nesting waterfowl, and other wildlife use of project and project-affected waters.
- (Expanded Issues Addressed: TE2, TE3, TE17, TE18, TE19, TE20, TE29, TE39, TE41, TE44a, TE46, TE47, TE48, TE50, TE51, TE57, TE59, TE60 TE62, F1, FE28, W3, W7, W8)
- T2. Project effects on federal and State listed, species of concern, candidate, proposed, and likely listed threatened, endangered, sensitive, and special interest plant and animal species, and the habitat needed to support them. Concerns include, but are not limited to, amphibians, bald eagle foraging habitat, winter roosts, and nesting territories.
- (Expanded Issues Addressed: TE4, TE7, TE 8, TE11, TE12, TE13, TE15, TE16, TE17, TE19, TE20, TE21, TE22, TE25, TE38, TE45, TE46, TE53, TE56, TE57, TE59, TE60 TE62, F13)
- T3. Effects of existing and future project operations on floodplains and project water fluctuation zones, including soil stability, wildlife habitat and natural flood management functions, revegetation of native plant communities, and restoration opportunities (e.g., red willow planting).
- (Expanded Issues Addressed: TE6, TE29, TE34, TE39, TE40, TE52, TE56, TE57 TE61, GE15, GE17, GE18, G1, F13, W7)
- T4. Existing and future project effects on biodiversity (including plant species, seral stages, vegetation types and communities, and wildlife) and ecosystem health and stability.
- (Expanded Issues Addressed: TE14, TE17, TE18, TE19, TE20, TE25, TE39, TE40, TE47, TE62)
- T5. Project effects on riparian resources and the protection and management of riparian habitat and wetlands (including vernal pools and brood ponds).
- (Expanded Issues Addressed: TE23, TE24, TE34, TE35, TE37, TE39, TE48, TE52, TE58, TE61, G1, GE3, GE17, GE18, W7)
- T6. Interagency management coordination; adequacy of management plans and activities and funding for wildlife management.
- (Expanded Issues Addressed: TE10, TE26, TE32, TE39, TE44b, TE49, TE54, TE55 G3, F5)
- T7. Effects of the project on the introduction, distribution, and management of noxious terrestrial and aquatic weeds.
- (Expanded Issues Addressed: TE30a, TE30b, TE31, TE40, TE42, TE47, TE51, FE22)
- T8. Effects of the project on the introduction, distribution, and management of undesirable non-native wildlife species.
- (Expanded Issue Addressed: TE30a, TE47)

- T9. Effects of existing and future project-related recreation facilities, activities (including authorized and unauthorized access and use), and management on nesting and wintering Pacific Flyway waterfowl, other wildlife, and plant communities.  
(Expanded Issue Addressed: TE59, TE60, TE62)
- T10. Effects of existing and future project features, operations, and maintenance on upland habitat types, including revegetation and restoration efforts.  
(Expanded Issue Addressed: TE59, TE62, TE63, G3, W7)
- T11. Effects of fire prevention/fuel load control on natural communities.  
(Expanded Issue Addressed: TE33, TE64)

#### **4.6 Federally Listed Threatened and Endangered Species (T&E)**

T&E1. Federally listed threatened and endangered plants and wildlife will be addressed in T2.

T&E2. Federally listed threatened and endangered fish species will be addressed in F13.

#### **4.7 Cultural Resources (C)**

- CR1. Determine the nature, distribution and value of cultural resources (including archaeological sites, historic resources, and traditional use areas) within the Area of Potential Effects.

(Issues addressed: CRE 2, CRE 3, CRE 8, CRE 10-13, CRE 15, CRE 18, CRE 21, CRE 24, CRE 25, CRE 28, CRE 29, CRE 31-35, CRE 37, CRE 39-42, CRE 45, CRE 51, CRE 53, CRE 55, CRE 57, and CRE 58)

- CR2. Evaluate the need and methods to provide protection of cultural resources (including archaeological sites, historic resources, and traditional use areas) within the Area of Potential Effects.

(Issues addressed: CRE 1, CRE 2, CRE 3, CRE 5, CRE 6, CRE 8, CRE 9, CRE 11, CRE 15, CRE 17, CRE 18, CRE 21, CRE 22, CRE 24-26, CRE 28, CRE 29, CRE 33, CRE 35-38, CRE 41, CRE 42, CRE 45, CRE 46, CRE 50, CRE 52, CRE 53, CRE 54)

- CR3. Determine the effects of existing and future project facilities, operations and maintenance (including recreational developments and other land use decisions) on cultural resources within the Area of Potential Effects.

(Issues addressed: CRE 2, CRE 8, CRE 11, CRE 18, CRE 21, CRE 25, CRE 26, CRE 29, CRE 41, CRE 45, CRE 53, CRE 58)

- CR4. Provide for the interpretation of cultural resources and make available cultural resources data relative to the Oroville project area.

(Issues addressed: CRE 4, CRE 7, CRE 8, CRE 11, CRE 14, CRE 16, CRE 17-20, CRE 23, CRE 27, CRE 29, CRE 30, CRE 37, CRE 38, CRE 43, CRE 44, CRE 47, CRE 48, CRE 49, CRE 56, CRE 57, CRE 58)

#### **4.8 Recreation and Socioeconomics (R/S)**

- R1. Adequacy of existing project recreation facilities, opportunities, and access to accommodate current use and future demand.
- (Issues addressed: RE 1, RE 2, RE 5-39, RE 41, RE 52, RE 53, RE 55-62, RE 64-85, RE 95, RE 96, RE 98, RE 103 RE 104, RE 105)
- R2. Adequacy of public safety at the Oroville Project No. 2100 recreation facilities.
- (Issues addressed: RE 49, RE 92, RE 93)
- R3. Effects of facilities operations on recreation and socioeconomic opportunities.
- (Issues addressed: RE 44, RE 50, RE 51, RE 54, RE 63, RE 109, RE 114)
- R4. Adequacy of operations and maintenance and clean-up activities associated with existing and new recreation areas to provide a quality recreational experience.
- (Issues addressed: RE 87-91)
- R5. Appropriate recreation funding, development, and management structure.
- (Issues addressed: RE 3, RE 4, RE 5-10, RE 12, RE 13-15, RE 28-39, RE 52, RE 53, RE 55-62, RE 64-85, RE 96, RE 104, RE 105, RE 110-113, RE 115)
- R6. Appropriate management of fisheries and wildlife resources to provide recreation opportunities.
- (Issues addressed: RE 42, RE 43, RE 45-48, RE 63, RE 84, RE 107-109)
- S1. Improve economic development through recreation- opportunities at the Oroville Facilities.
- (Issues addressed: RE 116)
- S2. Assess the economic feasibility of economic development through lower local utility rates and/or other available economic options related to project resources.
- (Issues addressed: RE 117)
- S3. What are the socioeconomic impacts of the Oroville Facilities and their operation on local governments, residents, agriculture, businesses, and other interests within Butte County.

#### **4.9 Land Use, Land Management, and Aesthetic Resources (LU/LM/A)**

The following definition of “project lands” shall apply solely to Land Use, Land Management, and Aesthetics Resource issue statements. The term “project lands” means all lands (and other interests in lands) within the FERC Project boundaries, including lands owned by DWR, lands managed by DPR as part of the Lake Oroville State Recreation Area, lands managed by DFG as part of the Oroville Wildlife Area, and lands managed by the U.S. Forest Service and Bureau of Land



Management), as well as lands which may potentially be incorporated into or deleted from the revised FERC Project boundaries as part of the relicensing process.

- LU1. What are the appropriate, compatible, and potential developmental and nondevelopmental uses of project lands especially for public use, public access, open space, recreational uses, watershed and natural resources protection/management, energy resources, and cultural values in a way that integrates and respects: 1) resource constraints; 2) adjacent land uses; and 3) applicable plans (including the Forest Service, State, County, and City of Oroville land planning and zoning) and policies for project lands and adjacent lands?

(Expanded Issues Addressed: LUE1, LUE2, LUE3, LUE6, LUE7, LUE8)

- LU2. What is the potential for acquiring or removing project lands (including other property interests) to meet resource goals?

(Expanded Issues Addressed: LUE4, LUE5, LUE9, LUE10)

- LM1. What are the funding and staffing needs to adequately address land management for the Oroville Wildlife Area, Lake Oroville State Recreation Area (LOSRA), Thermalito Afterbay, and other project lands?

(Expanded Issues Addressed: LME1, LME4, LME5, LME16)

- LM2. What are the existing and future fuel loads, fuel management practices, and coordination of fuel management activities for lands located within and adjacent to the project boundary to manage the risk of loss of property, lives, and natural resources?

(Expanded Issues Addressed: LME6, LME7, LME10, LME14)

- LM3. What is an appropriate arrangement for land management of recreation facilities of LOSRA, Thermalito Afterbay, Wildlife area, and other project lands?

(Expanded Issues Addressed: LME8)

- LM4. What are appropriate law enforcement activities, security, and penalties for project lands?

(Expanded Issues Addressed: LME1, LME4, LME5, LME15, LME 6)

- A1. What are the effects of reservoir drawdown on the visual quality at Lake Oroville and other project lands?

(Expanded Issues Addressed: AE6, AE16)

- A2. What are the effects of construction debris, garbage, and invasive species on the appearance of project lands?

(Expanded Issues Addressed: AE1, AE2, AE3, AE4, AE5, AE15)

- A3. What are the appropriate landscaping, restoration, preservation, vegetation, and facilities management/maintenance programs for aesthetic enhancement of project lands?

(Expanded Issues Addressed: AE10, AE11, AE12, AE13, AE14, AE16)

- A4. What are the effects of existing and future project features (including transmission lines, trails, etc.) and land uses on the aesthetic quality of project lands?

(Expanded Issues Addressed: AE7, AE8, AE9, AE10, AE16)

#### **4.10 Engineering and Operations Resources (E)**

The four engineering and operations issues listed in Section 3.0 of this document will serve as the focus for specific studies that will be needed to develop and evaluate project alternatives. The issues listed below will also be important in alternatives development and because they are closely linked to environmental issues, will be addressed in several resource areas.

- E1. Evaluate the potential for adding additional electrical generation using existing infrastructure, modifying facilities to increase storage and associated generation, and changing operation to provide spinning reserve (e.g., motoring).

(Issues addressed: EE1, EE2, and EE14).

- E2. Evaluate the potential to improve operations through use of real-time watershed hydrologic projections for flood and non-flood conditions.

(Issues addressed: EE3, EE12).

- E3. Evaluate potential for improved coordinated operation of Oroville Facilities through additional coordination with other water storage facilities and regulatory and resource agencies (e.g., CALFED).

(Issues addressed: EE5 and EE6).

- E4. Evaluate environmental and economic aspects of different flow regimes (see Issue E2 above). Factors to be considered include timing, magnitude and duration of flows, pump-back and maintenance scheduling, and hatchery operations.

(Issues addressed: EE4, EE7, EE8, EE13, EE25, EE26 EE28, EE32 and EE33)

- E5. Evaluate impact of flood releases on Lake Oroville dam (including need for access to north side of dam) and downstream facilities including downstream levee stability and potential for ameliorating downstream flooding through coordinated releases with other water storage facilities. Consider past floods, improvements in channel carrying capacities, need for more storage (e.g., installing Obermeyer gates on the emergency spillway ogee), operational changes, early warning system for downstream releases, and updating of flood operation manual.

(Issues addressed: EE11, EE17, EE19, EE21, EE22, EE23, EE47, EE51, EE52, EE53, EE56)

- E6. Evaluate effect of ramping rates on downstream facilities, power generation, water supply, water temperatures, and fish.

(Issue addressed: EE10)

- E7. Evaluate effect of the project including discharge (magnitude, frequency and timing) and ramping rates and the altered stream hydrology on substrate scour, mobilization of sediments, turbidity levels, and riparian vegetation in the low flow reach and downstream of the afterbay.

(Issues addressed: EE29, EE30, EE36, EE41 and EE42)

- E8. Evaluate effect of reservoir sedimentation and sediments on project operations.

(Issues addressed: EE9, EE27 and EE46)

- E9. Evaluate effect of Oroville Facilities power generation pricing schedule on local economy.

(Issue addressed: EE16)

- E10. Evaluate effect of future water demands on project operations including power generation, lake levels, and downstream flows. Consider sale of existing water allotments to downstream users.

(Issues addressed: EE18 and EE20)

- E11. Evaluate effect of tires in Parrish Cove and Bidwell Cove and stakes used to hold down recycled Christmas trees on public safety.

(Issues addressed: EE54 and EE55)

- E12. Evaluate operational and engineering alternatives including selective withdrawal from Lake Oroville, Thermalito Afterbay, the hatchery, and the low flow section to meet various downstream temperature requirements.

(Issues addressed: EE15 and EE43)

- E13. Evaluate operational and engineering alternatives to prevent interbreeding of fall and spring-run Chinook salmon in the low flow section of the Feather River (e.g., migration barrier and/or flow and temperature changes).

(Issue addressed: EE24)

- E14. Evaluate operational alternatives that balance and maintain acceptable water quality standards, including those for methyl-tertiary butyl ether (MTBE) under all operational plans and conditions.

(Issue addressed: EE37)

- E15. Evaluate operation alternatives that maintain or improve current water supply under all operation plans and conditions.

(Issues addressed: EE13, EE14)

## **5.0 CUMULATIVE EFFECTS AND COMPREHENSIVE PLANS**

### **5.1 Cumulative Effects**

According to the Council on Environmental Quality's (CEQ) regulations for implementing NEPA<sup>5</sup> and the CEQA Guidelines<sup>6</sup>, an action may cause cumulative impacts on the environment if its effects overlap in space and/or time with the effects of other actions, regardless of what agency or person undertakes the action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities. To meet NEPA/CEQA requirements, cumulative effects must be analyzed in the PDEA.

The approach for addressing cumulative impacts has been discussed within the collaborative process. A Task Force of the environmental Work Group developed a draft guidance document to assist DWR in conducting the ESA and Cumulative Impacts Analysis. Although the U.S. Fish and Wildlife Service (USFWS) and NMFS participated in development of the draft guidance document, they could not support the draft document because of language that they perceived to affect their statutory authority under the Endangered Species Act.

The USFWS and NMFS intend to continue their efforts at the environmental technical Task Force and Work Group level to resolve technical issues, particularly regarding temporal and geographic scope. Both the USFWS and NMFS committed to submitting separate letters containing their ESA and cumulative impacts guidance.

DWR intends to use the draft guidance document and the letters from the two agencies as its guidance for addressing cumulative impacts. The draft guidance can be found in Appendix F.

### **5.2 Comprehensive Plans**

In keeping with the FERC guidelines, the environmental review of Project No. 2100 will include an analysis of project compliance with comprehensive plans pertaining to the resources of the project area. The licensee will identify and review relevant management goals and objectives from resource plans listed in FERC's "List of Comprehensive Plans."

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<sup>5</sup> 50CFR§1508.7

<sup>6</sup> 14 C.C.R. Section 15130 (Cumulative Impacts)

## **6.0 DRAFT PDEA OUTLINE**

The tentative outline for the Oroville Facilities PDEA is shown below. The outline is based on general NEPA guidelines and recent FERC recommendations, combined with the content requirements of CEQA; the actual contents, organization, and structure of the PDEA may be revised, depending on input received from stakeholders during scoping.

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SOUTH SUTTER WATER DISTRICT

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UNITED STATES BUREAU OF LAND MANAGEMENT

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UNITED STATES FISH & WILDLIFE SERVICE

CRAIG FLEMING  
UNITED STATES FISH & WILDLIFE SERVICE

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WESTERN CANAL WATER DISTRICT

THAD BETTNER, DIRECTOR OF RESOURCES  
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KELLY PURDOM  
YUBA COUNTY O.E.S.

CURT AIKENS  
YUBA COUNTY WATER AGENCY

DAN LOGUE  
YUBA SUTTER FLOOD CONTROL COMMITTEE

VINCE WONG  
ZONE 7 WATER AGENCY

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JOE ABELL

STEPHEN ADAMS

RONALD ADDIS

LEONARD ADKERSON

GLADYS ALGER

RON ALGER

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CALVIN ANDERSON	MICHAEL BRUNO
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MICHAEL ANDREW	CLINTON BUCKLEY
JERRY ANTONETTI	MELVA BURKHART
STEPHEN AVAKIAN	DANIEL BURNHAM
RICHARD AYRES	FLOYD BYRD
ALAN AZEVEDO	LARRY BYRNS
BRADLEY BAKER	PAULINE BYRNS
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BERYL BARBER	GEORGE CAMERON
MANUEL BARBOZA	JOHN CAMERON
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ANITA BELL	LARRY CARNAHAN
ROMAN BEMOSKI	STEVE CARSON
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FRANK BERNHARD	DAVID CASSIANNI
FLOYD BERRINGER	RAMON CASTANEDA
CAMERON BERRY	LEE CASTLEBERRY
LEO BETTI	GARTH CASTOR
MARCELLA BIEHN	FRANK CAUNT
STEVEN BIGELOW	LOUIS CECCHI
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ALMA G. BLESSING	MORGAN CHAMBERS
LESA BOETTO	CIPRIANO CHAVEZ
RALPH BOOTH	MATTHEW CHUCHEL
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GEORGE BREAU	TIMOTHY CHURCH
DARRELL BROKAW	RALPH CLARK
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ERNEST COMBS	JACK DUFFY
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BUTCH COPELAND	DON DWYER
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WILLIAM CROSS	W.R. FIEDLER
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LEONARD CUSHING	WILLIAM FOX
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JOHN SMITH	EDGAR WALTON
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